

Ethiopia Community Prevention of Mother-to- Child Transmission Project

Study of feeding practices among
HIV-positive mothers and their
children less than two years of age



USAID
FROM THE AMERICAN PEOPLE

MAILING ADDRESS

PO Box 900922
Seattle, WA 98109
USA

ADDRESS

2201 Westlake Avenue
Suite 200
Seattle, WA, USA

TEL: 206.285.3500

FAX: 206.285.6619

www.path.org



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Abbreviations

ACIPH	Addis Continental Institute of Public Health
BM	breast milk
C-PMTCT	community prevention of mother-to-child transmission
CF	complementary feeding
EBF	exclusive breastfeeding
HIV	human immunodeficiency virus
IDI	in-depth interview
IRB	institutional review board
IYCF	infant and young child feeding
KAP	knowledge, attitudes, practices
MSG	mother support group
NGO	nongovernmental organization
ORS	oral rehydration solution
PAHO	Pan-American Health Organization
PMTCT	prevention of mother-to-child transmission
<i>ProPAN</i>	Process for the Promotion of Child Feeding and Data Analysis
REC	research ethics committee
TIPs	trials of improved practices
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

Executive Summary

The USAID-funded, IntraHealth-led, Community Prevention of Mother-to-Child Transmission (C-PMTCT) project is working to improve prevention of mother-to-child transmission (PMTCT) services in five regions of Ethiopia. From June through August 2012, the C-PMTCT project conducted a study in three regions of Ethiopia to identify facilitating factors for and barriers to HIV-positive mothers practicing optimal infant and young child feeding and caring practices for their children less than two years of age.

The focus of this study was on children less than two years of age because this is the period when children's nutritional requirements are highest, children's growth is most rapid, and children's susceptibility to infections is highest. Compromised growth during this period is usually irreversible, so preventing and addressing early growth faltering in children less than two years of age is an important strategy to prevent malnutrition. There is also an urgent need to improve safe and optimal infant and young child feeding (IYCF) practices in the context of HIV/AIDS in order to protect HIV-exposed infants and young children from HIV transmission and ensure HIV-free survival.

This study used both qualitative and quantitative methods to determine what HIV-positive mothers know about optimal IYCF practices in the context of HIV/AIDS, what their current practices are, and what changes are feasible and adoptable for mothers to improve their feeding and caring practices for their children under the age of two. Key informants from the three regions were also interviewed to get a sense of their knowledge and recommendations around IYCF practices in the context of HIV/AIDS.

Key informants from the community, including health care workers and mother support group (MSG) mentors, expressed concern about the impact that single parenting, low income, and food insecurity can have on mothers to optimally care for and feed their young children. Several key informants also felt strongly that many times poor nutritional status in children was not necessarily an issue of income, but a lack of adequate knowledge and support. Key informants would like to see continued support for MSGs and more MSG involvement in educating mothers and other community members about protecting and promoting IYCF and proper child care for HIV-exposed children.

Adequate income, access to nutritious foods, knowledge about healthy eating, and proper feeding and caring practices are all factors in the good nutrition equation for a young child. About 20% of the mothers in the study reported some type of food insecurity in their household. 71% of the mothers who were surveyed reported eating foods from four or more food groups per day, while most of the children between 6 and 23 months of age were eating fewer than four food groups per day. A key recommendation from this finding is that knowledge about and self-efficacy to feed more types of foods to young children, as well as food security and income, are important factors that enable HIV-positive mothers to practice optimal IYCF.

Through trials of improved practices (TIPs), participating mothers were asked if they would like to try one or two new child feeding practices for a trial period of 14 days. The recommendations were tailored for each mother and her child less than two years of age based on an initial household observation visit and 24-hour dietary recall. For infants up to six months of age, the recommendations focused around improved breastfeeding practices. For infants 6-23 months of age, the recommendation focused on improved complementary feeding, caring, and breastfeeding practices. Most mothers agreed to try one or two new practices. Almost all mothers who tried new behaviors reported positive effects on their children. Many mothers said they would continue the new practices after the trial. Of the mothers who said they didn't plan

to continue the practices after the trial, lack of income, lack of access to fruits and vegetables, and shortage of time for food preparation and feeding were the most common obstacles cited. Even mothers who said they didn't plan to continue new practices said that they would recommend them to other mothers in the community. The 24-hour dietary recall for participating children was repeated after the trial period. Children consumed more protein, iron, and calcium after the trial than before the trial. However, even after the trial, only two children met 100% of the median energy recommendation during the final TIPs visit, an increase from one child during the initial TIPs visit. A key recommendation coming from this finding is that counselors must focus messages and program activities on increasing quantity, as well as improving the quality and variety of foods fed to 6-23 month olds. It is also important to

The authors hope that these findings will help to tailor program activities and social and behavior change interventions in Ethiopia to more effectively support HIV-positive mothers to feed and care for their infants and children so that they can remain HIV-free, and reach their full potential.

Introduction to the Study

IYCF Practices, PMTCT, and Malnutrition in Ethiopia

Ethiopian children experience among the highest rates of malnutrition in sub-Saharan Africa. According to the two consecutive Ethiopia Demographic and Health Surveys (EDHS) in 2000 and 2005,¹ the prevalence of wasting² (low weight-for-height) in children less than five years of age in Ethiopia remained static at 11% between 2000 and 2005 while underweight (low weight-for-age) and stunting (low height-for-age) declined by nine percentage points (from 47 to 38%) and five percentage points (from 52 to 47%), respectively. Despite these advances, more than a third of children are still underweight, and almost half are stunted. Of these measures, stunting is the best measure of nutritional status because it is not affected by changes in season or short-term illness. Worldwide, 14.6% and 14% of child deaths can be attributed to wasting and stunting, respectively. Moreover, stunting has deleterious effects for lifetime survival, grade completion in school, productivity, and lifetime earnings. Unfortunately, child height (length in younger children) is rarely collected, except in national surveys, due to the difficulty of taking accurate measurements.

While the prevalence of malnutrition among HIV-exposed Ethiopian children is unknown, these children tend to be more vulnerable due to the economic impact of HIV on families, and the added stresses on mothers that may affect their caring practices. Moreover, HIV-positive children, particularly those who are not on antiretroviral therapy, are more vulnerable to malnutrition than their HIV-negative counterparts because their energy requirements are higher (10% higher when asymptomatic and 20 to 30% higher when symptomatic).³

¹ WHO recently conducted a multisite study to develop child growth standards that are based on exclusively breastfed infants less than six months old and children 6–23 months old who continue to breastfeed and receive adequate complementary foods. Previous US National Center for Health Statistics standards were based on infants who were also formula fed. Ethiopia has not adopted these standards yet.

² There are three measures of malnutrition and growth: acute malnutrition or wasting (low weight-for-height), chronic malnutrition or stunting (low height-for-age), or underweight (low weight-for-age), a composite measure of stunting and wasting. The three together are often referred to as undernutrition.

³ The World Bank. HIV/AIDS, Nutrition, and Food Security: What we can do. A synthesis of international guidance. The World Bank, WHO, UNAIDS, AED, PATH, and others, 2007.

Determinants: Location, Maternal Education, and Income

In Ethiopia, malnutrition in children less than five years old varies by age group, location, mother's education, and wealth quintile. For example, stunting is highest in the two- to three-year-old age group, in rural areas, when mothers have no education, and in the poorest households. Stunting also varies by region in Ethiopia—in Addis Ababa only 20% of children are stunted compared to 63% of children in the Amhara region (prevalence using the World Health Organization [WHO] Child Growth Standards). It is striking that 35% of children living in even the wealthiest households in Ethiopia are stunted, while 52% of children living in the poorest households are not stunted (based on the previous US National Center for Health Statistics standards). These statistics demonstrate that a child's growth is dependent on many factors other than income and food availability. Identifying the facilitators and barriers that help or hinder caregivers from preventing malnutrition is important in developing strategies to address malnutrition.

Infant and Young Child Feeding: Breastfeeding

IYCF practices are major determinants of the risk of malnutrition in developing countries, including Ethiopia. Breastfeeding is nearly universal in Ethiopia, with 96% of children being breastfed at some point. However, a high proportion of women do not practice appropriate breastfeeding and complementary feeding behaviors with their children. For example, about one-third of babies do not receive breast milk within one hour of birth and only one in three children ages 4 to 5 months old are exclusively breastfed.

While 99% of infants less than six months old were breastfed in 2005, only 49% were exclusively breastfed, the recommended feeding method for this age group. One-fifth of the infants less than six months old were predominantly breastfed (given breast milk with water or water-based teas and juices), which increases the risk of HIV-transmission and other infections. Partial breastfeeding (giving breast milk with solids or other milks) is the most dangerous way to feed infants less than six months old. In 2005, 16% of Ethiopian infants less than six months old received other milk in addition to breast milk, while 14% of infants received breast milk and solid foods. When compared with exclusive breastfeeding, partial breastfeeding in the first six months increases risk of diarrhea and pneumonia mortality by five-fold and two-fold, respectively. There is an 11-fold and a 15-fold increased risk of diarrhea and pneumonia mortality, respectively, when infants are not breastfed at all.⁴ It is estimated that in Ethiopia there are about 50,000 infant deaths a year (about 18% of all infant deaths every year) attributable to less-than-optimal breastfeeding practices.⁵

Mixed Feeding in HIV-Affected Infants Less than Six Months of Age

Feeding infants less than six months of age with breast milk and other liquids, milk, formula, or solid food, called "mixed feeding" in the HIV context, puts the HIV-exposed infant at the increased risk of acquiring HIV from breast milk, as well as non-HIV-related infections. In one study, the risk of HIV transmission increased when HIV-exposed infants were given breast milk and formula (hazard ratio=1.82) compared to infants who were exclusively breastfed.⁶ Giving breast milk with solid foods increased the risk of HIV transmission even more (hazard ratio=10.87) when compared to exclusively breastfed infants. Mortality from HIV and other

⁴ Black, RE, et al., Maternal and child undernutrition: global and regional exposures and health consequences. The Lancet Maternal and Child Undernutrition series, 2008. Published online January 17, 2008 (DOI: 10.1016/S0140-6736(07)61690-0).

⁵ Ethiopian PROFILES, 2006. Developed with the Federal Ministry of Health with the AED-led FANTA project.

⁶ Coovadia, H.M., et al., 2007. Mother-to-child transmission of HIV-1 infection during exclusive breastfeeding in the first 6 months of life: an intervention cohort study. The Lancet 469:1107-16.

infections at three months was 6% in HIV-exposed infants who were exclusively breastfed compared 15% in infants given replacement feeding.

Feeding Children 6 to 23 Months Old

Children 6 to 23 months old should continue on-demand breastfeeding and also receive foods to complement the nutrients they receive in breast milk, which no longer supplies all their nutritional requirements. Complementary foods should be introduced starting at six months and gradually increased over this time period, but only 46% of Ethiopian infants 6 to 8 months old receive complementary foods.⁷ Four indicators of adequate feeding practices for children 6 to 23 months old were created to determine the adequacy of feeding practices: continued breastfeeding to one year old, continued breastfeeding to two years old, minimum dietary diversity, and minimum meal frequency.⁸ In Ethiopia, 93% of infants are breastfed until they are one year old and 86% continue to breastfeed until they are two years old. Only 4% of all infants received the minimum dietary diversity (\geq four food groups⁹ per day) and only 42% of breastfed infants receive the minimum meal frequency (two to three meals per day for infants 6 to 8 months old; three to four meals per day for young children 9 to 23 months old with one to two additional snacks as desired). Children who are not breastfed should be given one to two cups of milk¹⁰ and one to two extra meals per day. When the indicators of children being fed the minimum food groups and minimum times a day are combined, only 3% of breastfed infants and young children 6 to 23 months old are being fed the minimum acceptable diet. It is not surprising, therefore, that the complementary feeding period (6 to 23 months) coincides with rapid increases in stunting, which is at its lowest at 0 to 0.49 years of age (19%) and at its highest at 2 to 2.99 years of age (59%).¹¹

According to the 2005 EDHS, grains are the most frequently consumed food by children 6 to 23 months old, with 70% of children consuming foods made from grains. However, the types of foods fed to children vary by age group, with children in the 18 to 23 month age group being fed a more diverse diet than children 6 to 8 months old. This indicates that a variety of foods available to families that could benefit younger children are not being fully exploited.

Infection and inadequate food intake interact to contribute to malnutrition; however, children will not succumb to severe wasting or chronic malnutrition if they are fed adequately during the illness to mitigate weight loss, and are fed more after the illness subsides to facilitate weight gain (restorative feeding). The 2005 EDHS shows that few children less than five years old are fed more liquids (8%) and food (1%) during an episode of diarrhea. There is no information about how children are fed after the illness is over.

Research Purpose and Objective

Learning more about whether mothers are able to practice the IYCF behaviors that are promoted through the C-PMTCT and other nutrition projects is vital to improving the effectiveness of those programs for preventing transmission of HIV, malnutrition, and mortality.

⁷ World Health Organization. Indicators for assessing infant and young child feeding practices. Part 3. Country Profiles. WHO, USAID, AED, UC Davis, IFPRI, UNICEF.

⁸ Ibid.

⁹ According to the research on which the WHO indicators are based, children who receive at least four of seven food groups (grains, roots, and tubers; legumes and nuts; dairy products [milk, yogurt, cheese]; flesh foods [meat, fish, poultry, and liver/organ meats]; eggs; vitamin A-rich fruits and vegetables; and other fruits and vegetables) are likely to consume at least one animal-source food and at least one fruit or vegetable, in addition to a staple food.

¹⁰ Acceptable milk sources include full-cream animal milk, Ultra High Temperature milk, reconstituted evaporated (but not condensed) milk, and fermented milk or yogurt.

¹¹ Ethiopia Demographic and Health Survey. Federal Ministry of Health and Macro International, 2005.

This study looked at the content and quantity of foods eaten by HIV-exposed children less than two years old whose caregivers attend MSGs. The study also investigated whether children are fed using responsive feeding techniques, which are particularly important for children who are difficult to feed. The study investigated barriers to feeding nutrient-dense foods, such as poor food availability; lack of income; seasonality; mothers' lack of time; lack of family involvement in feeding children, including who makes decisions on what foods are fed to children; food preferences and beliefs; and inadequate knowledge about feeding sick children.

The objective of this study was to identify the facilitating factors for and barriers to optimal IYCF practices for HIV-positive mothers with HIV-exposed children less than two years of age in Ethiopia.

Methods

Study Design

The study used a consultative research design, in which two groups of participants were involved—the first group included key informants, and the second group comprised mothers with children less than two years of age. Key informants from the respective communities included those working with HIV-positive mothers to practice optimal care and feeding for their children; facility-based health care providers, and MSG mentors (who are also HIV-positive mothers). The mothers who participated in the second phase of the study, all with children under two years of age, were all HIV-positive and attending a MSG. All had disclosed their HIV status to their husband (or partner), which was a criterion for inclusion in this study. Their children's HIV status was not obtained.

Table 1 shows the different locations where the study was conducted in addition to the group of individuals involved and the methods used.

Table 1: Study methods, participants, and locations

Location	Participants Involved	Methods Used
Local health facility	Key informants	In-depth interview (IDI)
	Mothers	KAP survey, anthropometry for mothers and children
Mother's home	Home visit 1: Mothers	TIPs initial interview, 24-hour diet recall for children, home observation
	Home visit 2: Mothers	TIPs counseling visit
	Home visit 3: Mothers	TIPs final visit, 24-hour recall for children, anthropometry for children

Table 2 shows the two phases of the study and details about the qualitative and quantitative methods used. Phase 1 took place at the local health facility of each site and included an in-depth interview (IDI) of key informants. All of the participating mothers also came to the health facility for the first phase of the study to complete a knowledge, attitudes, practices (KAP) survey and have anthropometric measurements taken (both mother and child).

Phase 2 involved three separate visits to the mother's home and included the TIPs initial interview visit, a TIPs counseling visit, and a final TIPs interview visit. A 24-hour diet recall for the child was conducted with each mother during the first home visit and the last home visit. Food preparation and feeding practices were observed during the first home visit. Anthropometry measurements were taken again during the final visit, but only for the children.

Table 2: Phases of the study design

	Qualitative Methods	Quantitative Methods
Phase 1 (at local health facility)	<ul style="list-style-type: none"> • IDI with key informants • KAP survey with mothers (breastfeeding and liquids, early feeding and source of info, water/sanitation/hygiene, mother's dietary diversity, and Household Hunger Scale) 	<ul style="list-style-type: none"> • Anthropometry for the mother and child
Phase 2 (home visits)	<ul style="list-style-type: none"> • TIPs (initial interview with mothers)—health of child, underweight, stunting, unhealthy foods, healthy foods, vitamin A, deworming, media and health messages, community involvement, and home construction materials • Home observations (food preparation and feeding practices) • TIPs counseling visit with mothers (age-appropriate recommendations to try) • TIPs final visit and interview with mothers 	<ul style="list-style-type: none"> • 24-hour diet recall for child during initial home visit • 24-hour diet recall for child during final home visit • Anthropometry for child during final home visit

Instrument Design

The instruments used in the study have been adapted from *Designing by Dialogue* (Dickin, Griffiths, & Piwoz, 1997), the *ProPAN* Manual (Pan-American Health Organization, 2004),¹² and the Rapid CATCH Indicators developed by the CORE group and others¹³. The instruments for the second and third TIPs visits were developed based on the KAP survey responses and the initial TIPs interview findings.

¹²*ProPAN* is a computer program developed by the Pan-American Health Organization (PAHO)/World Health Organization (WHO) in 2004 to do the dietary analysis for *Designing by Dialogue*.

¹³ http://www.mchipngo.net/controllers/link.cfc?method=tools_mande

UNICEF's seca scales and height/length boards for children as well as locally made height boards for mothers, which have been used in previous nutrition surveys implemented by Addis Continental Institute of Public Health (ACIPH), were used (see Table 3).

Table 3: Study instruments and tools

Study Phase	Type of Respondent	Research Instruments and Tools
Phase 1	Key informants	<i>Consent form for key informants to conduct in-depth interview</i>
		<i>Key informants in-depth interview guide</i>
	Mothers and children	<i>Consent form for mothers (for KAP survey, 24-hour dietary recalls, TIPs, and anthropometric study of mothers and their children)</i>
		<i>KAP survey tool with anthropometry recording form</i>
		<i>Anthropometric instruments (UNICEF seca scales, length/height boards, and mother height boards)</i>
Phase 2	Mothers and children	TIPs initial visit: <i>interview guide</i> (includes registration forms for the 24-hour dietary recall and the household observations)
	Mothers	TIPs counseling visit: <i>counseling guide</i> (developed based on TIPs initial visit and KAP results).
	Mothers and children	TIPs final visit: <i>interview guide including 24-hour diet recall forms</i>

Institutional Review Board Approvals

These instruments were submitted to the local institutional review board (IRB) and PATH's IRB, called the Research Ethics Committee (REC). Ethical clearance of the study proposal was obtained from PATH's REC and ACIPH's IRB.

Study Sites

The USAID-funded, IntraHealth-led C-PMTCT project is working to improve PMTCT services in five regions of Ethiopia. In this study, six MSG sites, in three regions of Ethiopia (Addis Ababa, Amhara, and Tigray) supported by the C-PMTCT project were chosen as the study sites. The study sites are located in the capital, Addis Ababa, in the city of Bahir Dar (in the Amhara region), the town of Hageresalam, and the city of Mekelle (both in the Tigray region).

The six MSG sites were chosen based on the large number of mothers participating in the MSGs and because they have been supported by C-PMTCT for the past two years.

Study Participants

Selection of key informants:

In each region, five to six key informants were randomly selected, for a total of 17 key informant IDIs (see Table 4). The two MSG mentors working in the selected MSG sites were invited to participate in the study. The selection of one health staff member, identified as a key informant, who directly monitors, supports, and facilitates the MSG was carried out with the help of the MSG mentors.

Table 4: Summary of sampling framework for key informants

Data Collection Method	Region	No. of Sites	Health Worker	MSG Mentors	Total IDI
IDIs with key informants	Addis Ababa	2	1	4	5
	Tigray	2	2	4	6
	Amhara	2	2	4	6
Total key informant interviews					17

Selection of mothers:

The names of all potential mothers in the selected MSG sites were collected. From this list, all who were eligible for the study (mothers of children under 23 months old) were identified. From each sampling frame, two eligible mothers were selected using the lottery method. The team leaders, who were trained in performing the lottery method, were responsible for identifying the two mothers to be enrolled. In each region, 16 mothers were randomly selected according to the age group of their children, as follows: 0 to 5 months old, 6 to 8 months old, 9 to 11 months old, and 12 to 23 months old (see Table 5). The division of age groups is due to the variation of infant feeding behaviors. Of the 48 mothers who were selected, 46 mothers completed the study. One mother dropped out and another mother was hospitalized; both were from the Addis Ababa region.

Table 5: Summary of sampling framework for mothers

Data Collection Method	Region	No. of Sites	No. Participants by Child's Age Group (mo.) (Two KAP and TIPs in each of the four age groups)				Total
			0–5	6–8	9–11	12–23	
KAP and TIPs with mothers	Addis	2	2	2	2	2	16
	Tigray	2	2	2	2	2	16
	Amhara	2	2	2	2	2	16
Total KAP and TIPs							48

Ethical Considerations

Informed written consent was obtained from each of the participants after they received a clear, verbal explanation of the study. The data collected was kept confidential and shall be used only for the purpose of this study.

When malnourished children were identified during the study, their mothers were provided with information on the available nutritional prevention and rehabilitation services and were encouraged to take their children for appropriate care and services. Severely ill children identified were provided a referral and transport to the nearest health facility with their mothers.

Training

A three-day intensive training was conducted at ACIPH for the six research assistants and three team leaders involved with the study. Training included learning about the aim of the study, receiving a detailed description of field work preparation, defining the roles of field staff, understanding the supervision processes, learning to use the study tools, and data collection (including anthropometric measurements), and questionnaire completion.

The first training day entailed a section-by-section overview of the KAP survey and the IDI guide. Role plays and adequate time for discussion were included to ensure all research assistants had consistent interviewing skills at the end of each session.

The second day of training consisted of an introduction and overview of the TIPs instruments. The third day of training included a pretest, field practice of anthropometric measurements, and finalization of the study tools based on the pretest. In addition, refresher trainings on TIPs interviewing, counseling, and a final visit were conducted at each phase of the survey.

Overall supervision was carried out by the principal investigators: Ashley Aakesson and Aweke Teklu from PATH, and Dr. Amare Worku from ACIPH.

Data Collection

Three teams were formed, one for each region, consisting of one principal investigator, one team lead, and two research assistants. Each team was equipped with a seca scale, a child height/length board, a mother height board, and a food weight measuring scale.

Phase 1 was launched in all three regions on July 8, 2012, and lasted until July 14, 2012. Six MSG sites were included in the study. The teams recorded the names of all participating MSG mothers on a list, along with the age category of their children per the inclusion/exclusion criteria. Next, the team leader transferred all the names of the eligible participants, according to the child's age group, onto a separate form, which was used to select the participants using the lottery method.

Generally, the data collection process was smooth. Each research assistant conducted an average of two interviews with two mothers every day, and they took the anthropometric measurements with close monitoring and assistance of the team leader at every instance. The team leaders kept track of the daily progress of each phase of the data collection process by using different checklists to closely monitor the progress of each interview. These included questionnaire editing forms and an interview progress sheet. Information on the total number of persons in the household, number of children under five years old, and completeness of the questionnaire were also captured.

Data Handling and Processing

The team leader brought all of the completed questionnaires to ACIPH's Data Management Unit. Data entry templates were developed for the KAP and TIPS dietary survey questionnaire using Epi Info (version 3.5.1 and 3.5.4 respectively). Data were entered on password-protected computers by two separate data entry clerks. Data were checked for consistency and any inconsistency was verified from the hard copy and cleaned. Qualitative data from IDI and TIPS were entered into open code for thematic analysis.

Each questionnaire was put back into its folder and shelved after entry. All data, with identifying information removed, were backed-up from each study site onto a compact disk.

Limitations of the Methods

The methods used in the study included quantitative and qualitative methods, and the mothers who participated in the KAP survey and TIPS were randomly selected. However, the group from which the sample was drawn is self-selecting, in that they have chosen to participate in mother support groups. In addition, the sample size for the KAP survey and TIPS is quite small, with just 46 mothers completing both the KAP survey and the TIPS. Thus the findings of this study are not statistically generalizable to all HIV-positive mothers with children less than two years of age in the regions where the study took place, nor in Ethiopia overall. The utility of the findings lies in the detailed information about current feeding and caring practices, within a context of food security and maternal nutrition among these specific mothers. In addition, the TIPS findings indicate which of the recommended IYCF practices mothers can currently practice, and what benefits they perceive from practicing them. In addition, the TIPS findings indicate which recommended IYCF practices are challenging for mothers to practice currently, and what specific barriers they face that prevent mothers from practicing them. This detailed data can improve the quality and effectiveness of counseling for HIV-positive mothers, as well as indicate programmatic interventions needed to support mothers to practice improved IYCF.

Survey Results

As shown in Table 6, in Phase 1 of the study there were a total of 48 mothers and 17 key informants. Phase 2 saw a decrease in the number of mothers to 46 (one became ill and one dropped out of the study) during the first home visit (initial TIPS interview) and the second home interview (TIPS counseling visit). During the third home visit (TIPS final interview), a total of 42 mothers participated from the original group. Additional details can be found in the discussion section.

Table 6: Number of participating mothers by phase and location

Phase	Location	Methods Included	No. of Participating Mothers
Phase 1	Health facility	KAP survey, anthropometry for mothers and children	48
Phase 2	Home visit 1	TIPs initial interview, 24-hour diet recall for children, and home observation	46
	Home visit 2	TIPs counseling visit	46
	Home visit 3	TIPs final visit, 24-hour recall for children, anthropometry for children	42

Characteristics of Study Participants

As shown in Table 7, among the 46 mothers included at the initial TIPs interview, 61% (28/46) of them were between the ages of 25 and 30. Forty-one percent (19/46) of the mothers were unable to read and write while 35% (16/46) had not completed elementary school.

Table 7: Characteristics of participating mothers

		Number	Frequency
Age of mother	18–24	8	17.4%
	25–30	28	61.4%
	31–38	10	21.8%
Maternal school years	Not able to read & write	19	41.3%
	< 8 th grade	16	34.8%
	8 th grade complete	6	13.0%
	9–11 th grade	5	10.9%

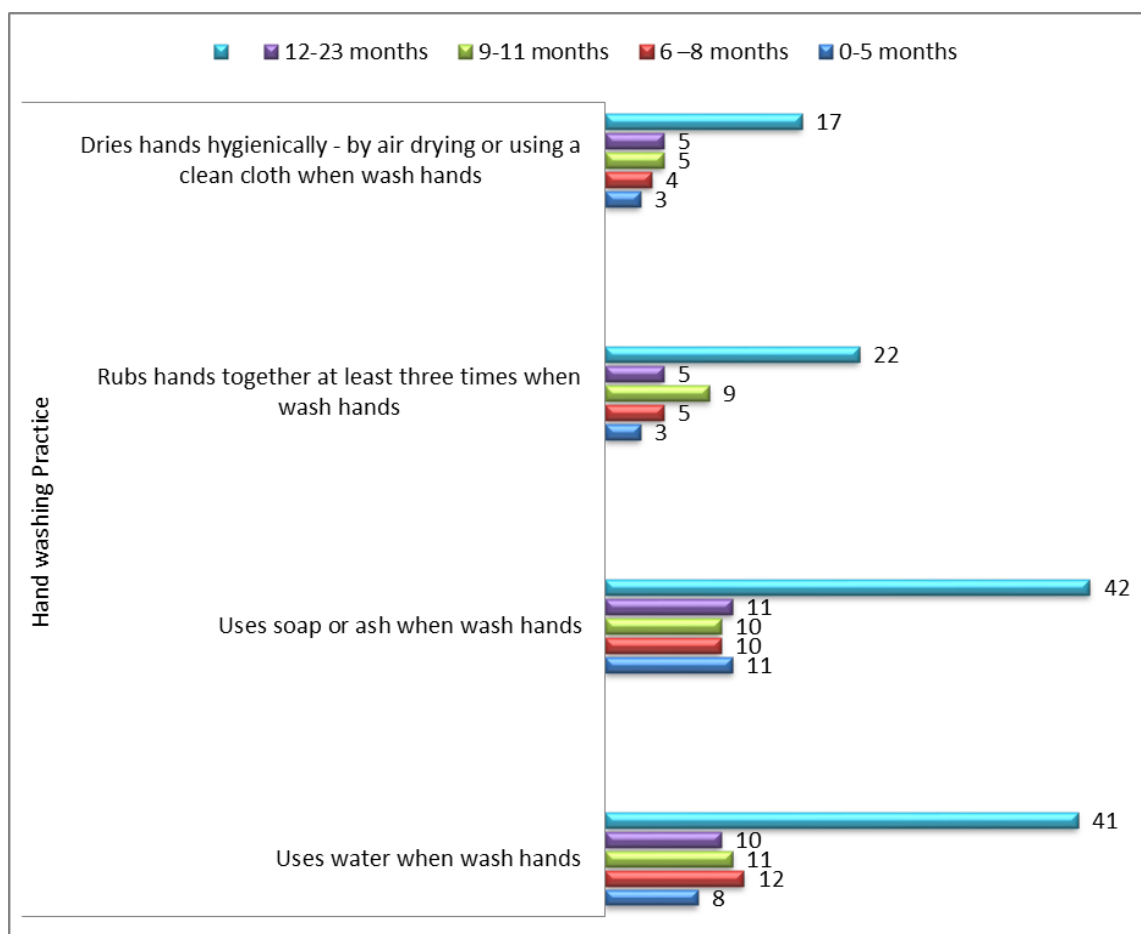
Regarding household construction materials, the floor and the walls were made of dirt or earth in more than two-thirds of households. The majority (43/46) of the households' roofs were made of sheet metal or tin. An electric power source was the principal source of light in the vast majority of households, though household observations revealed the source was often a car battery with a line to the house.

Fifty-nine percent (27/46) of mothers stated that they are involved in income-generating activities and less than half (16/46) participate in community organizations, such as credit associations, funeral associations (*Idir*), etc., respectively. The majority (38/46) of mothers mentioned wet markets as the common place for buying food for the family and half of them also mentioned going to the nearby store for the same purpose.

Water, Sanitation, and Hygiene

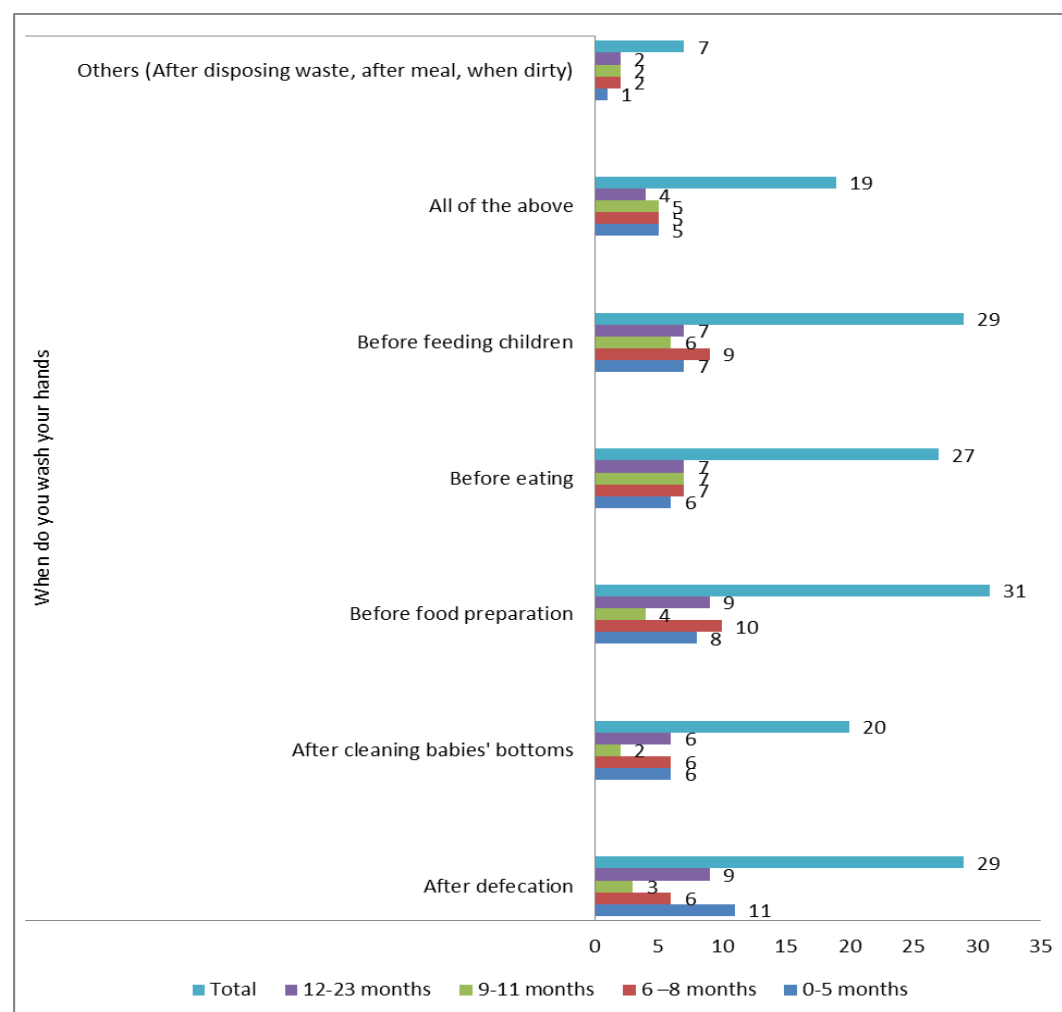
The KAP survey in phase 1 was administered to 48 mothers and captured some information regarding the mothers' water, sanitation, and hygiene practices at home (see Figure 1). All of the mothers store water for drinking in containers, most of which are narrow mouthed. When asked about hand-washing, 64% (31/48) of the mothers reported to practice it before food preparation, while 60% (29/48) reported before feeding children, and 56% (27/48) before eating. Almost all (42/48) of the mothers reported using soap or ash to clean their hands, while less than half (20/48) reported they rub their hands together at least three times. Only 35% (17/48) reported drying their hands hygienically after washing

Figure 1: Mothers' hand-washing practices—methods.



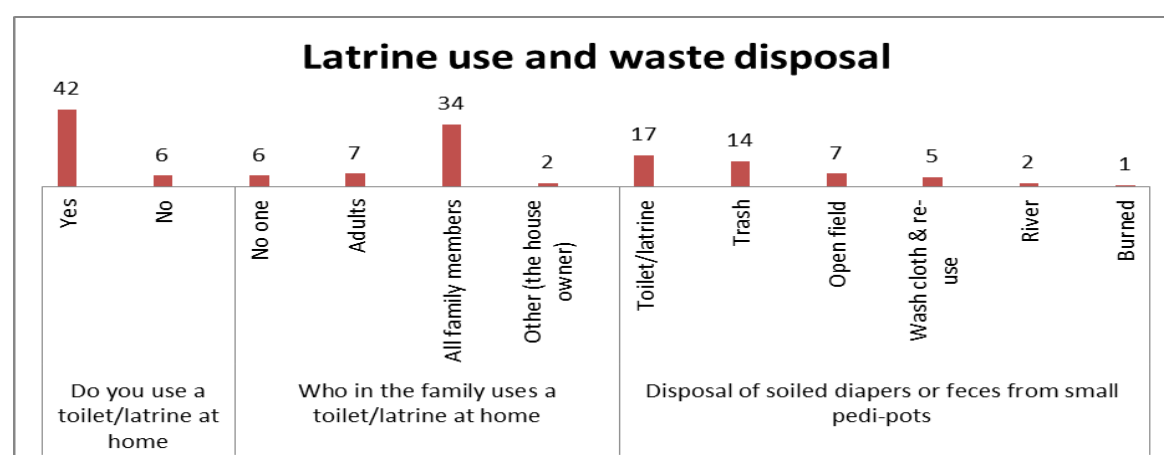
During the KAP survey only 42% (20/48) of the mothers indicated that they wash their hands after cleaning their baby's bottom, while 60% (29/48) wash their hands after they defecate (see Figure 2). Less than half (19/48) of the mothers indicated that they washed their hands for all of the following: after defecation, after cleaning a baby's bottom, before food preparation, before eating, and before feeding children.

Figure 2: Mothers' hand-washing practices—timing.



As shown in Figure 3, all mothers, except for six, use a toilet or latrine at home. The majority of mothers interviewed dispose of solid waste in the toilet, latrine, or in the trash.

Figure 3: Families' latrine use and waste disposal practices.

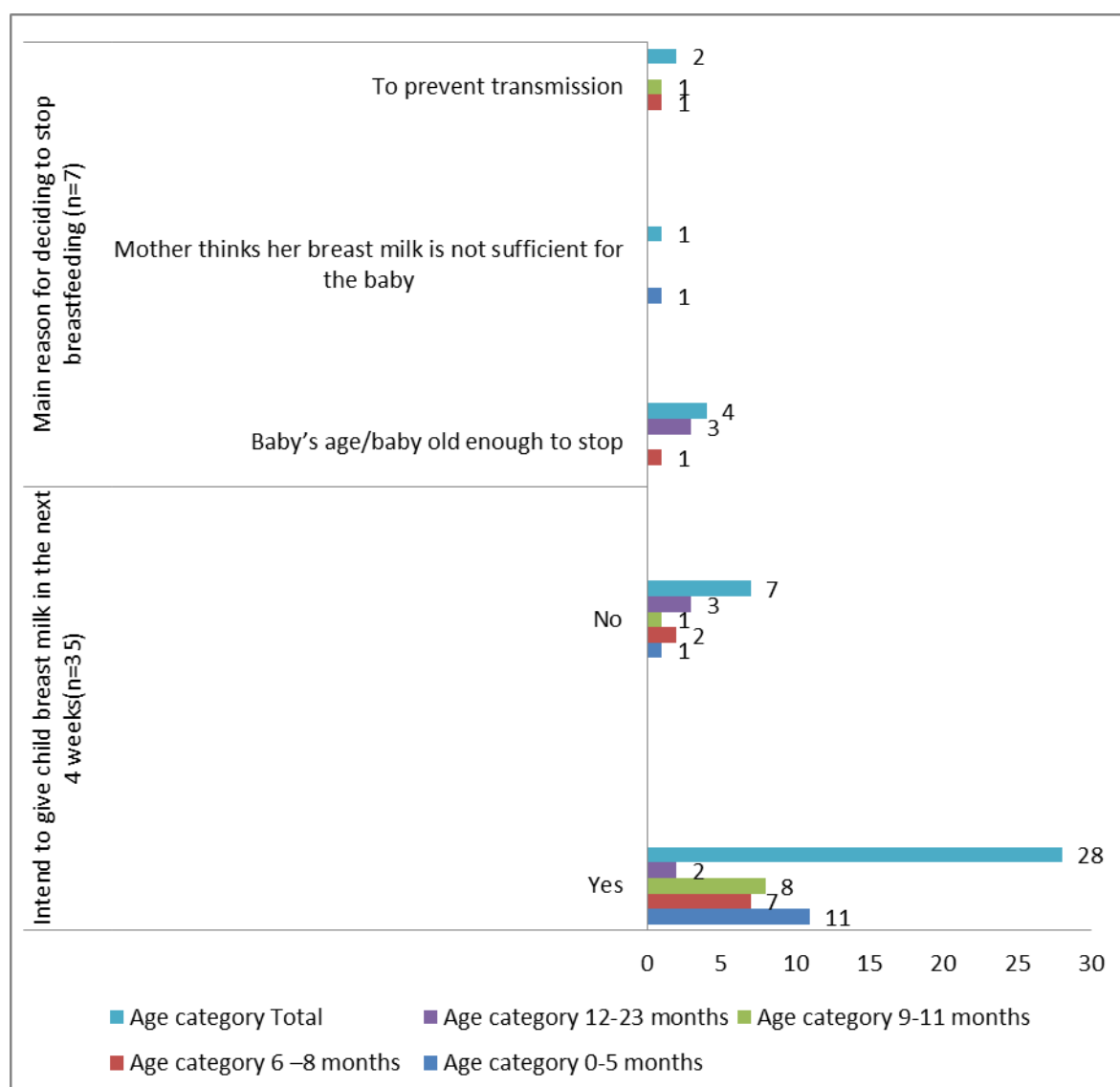


Breastfeeding and Liquids

During the KAP survey, almost all of the mothers (45/48) reported that their child had been breastfed. The day prior to the survey, 56% (25/45) of the mothers reported breastfeeding their child at least six times during the day and night, while 22% (10/45) breastfed less than six times, and 20% (9/45) had not breastfed at all. The day before the survey, of the infants who were 0 to 5 months old, 75% were breastfed six times or more and 25% were breastfed three to five times.

Among the 35 mothers who had breastfed their children in the past month, 80% (28/35) of them intended to continue to give their child breast milk for the upcoming four weeks (see Figure 4). Twenty percent (7/35) of the mothers who were unwilling to give breast milk for the upcoming four weeks mentioned one of the following as their main reason to stop: the intent of preventing HIV transmission, insufficiency of breast milk, or the child being old enough to stop.

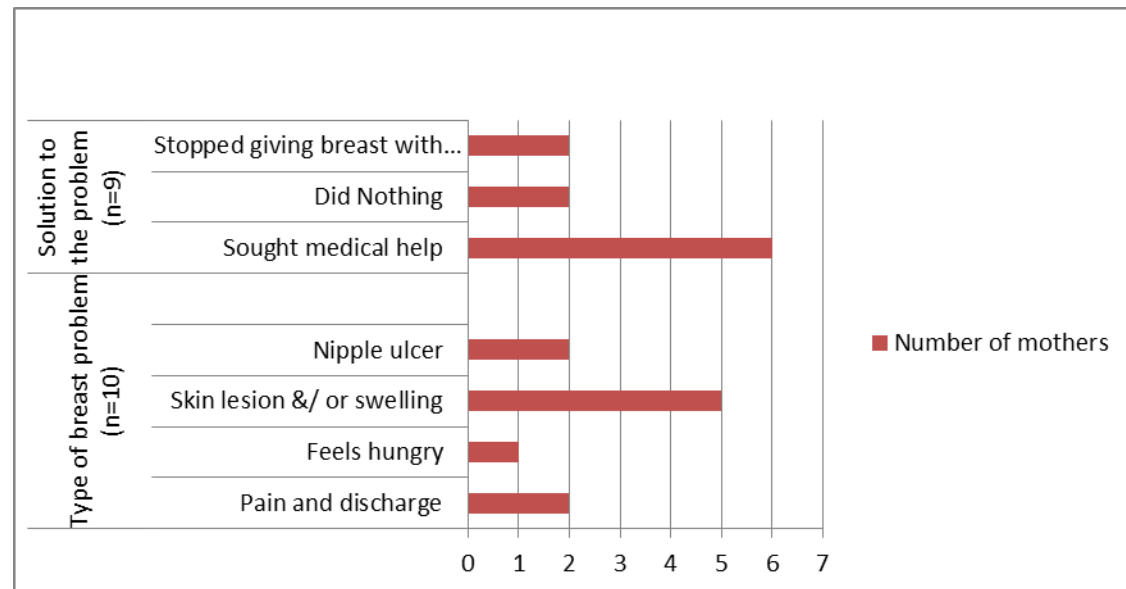
Figure 4: Mothers' intention to continue breastfeeding and reasons for stopping.



Breastfeeding Problems

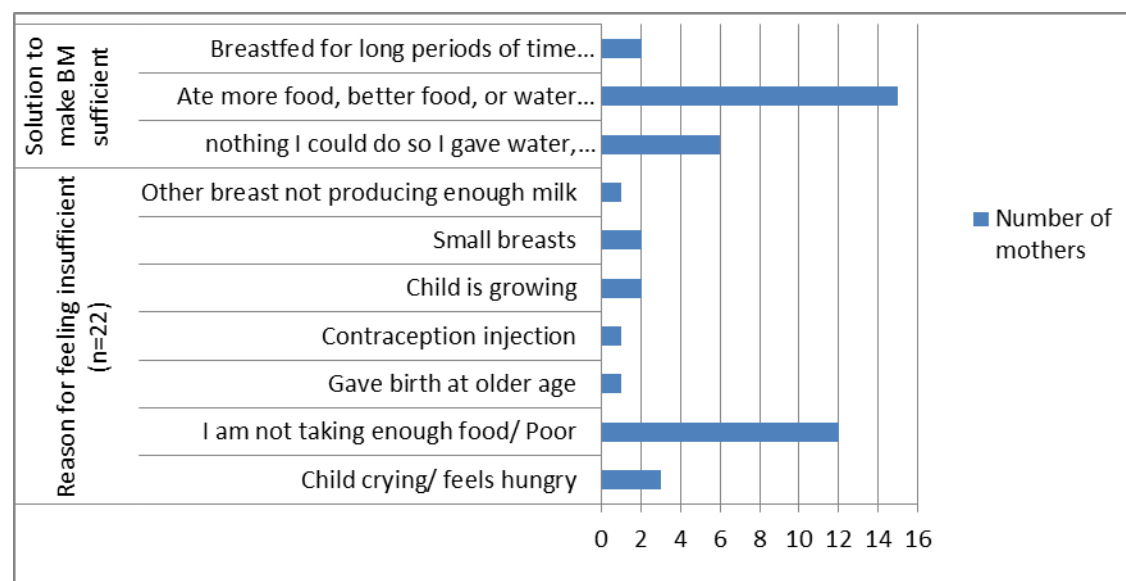
During the KAP survey, 22% (10/45) of the mothers reported experiencing problems during breastfeeding, including pain and discharge, hunger, skin lesions, swelling of the breast, or nipple ulcers (see Figure 5). For these problems, most mothers sought medical help and only one did nothing.

Figure 5: Reported problems with breastfeeding



Just over half (24/45) of the mothers interviewed through the KAP survey felt that their breast milk was of insufficient quantity, while 31% (14/45) of the mothers felt their breast milk was of insufficient quality. Twenty-seven percent (12/45) of the mothers attributed these insufficiencies to not consuming adequate food themselves (see Figure 6). When asked “what did you do to make your breast milk sufficient?” the majority of mothers tried to eat more food and water to improve the quantity and/or quality of their breast milk. Six mothers indicated they couldn’t do anything to make their breast milk sufficient, so they gave their children water.

Figure 6: Mothers’ perceived reasons for and solutions to insufficient breast milk



Early Initiation of Breastfeeding

Sixty-one percent (28/46) of the mothers initiated breastfeeding within the first hour after delivery. Only 6% of the mothers (3/46) refrained from any form of breastfeeding, another two did not give colostrum. Of the reasons for delayed initiation of breastfeeding, cesarean-section delivery (six mothers) ranked first followed by the desire to give a “balanced diet”, for weight gain (two mothers) and some mothers thought their child was not hungry due to the lack of crying (two mothers).

Twenty-nine mothers started to give liquids other than breast milk on a regular basis including juice/water, cow’s milk, formula milk, and even thin porridge/gruel after six months, while a few mothers (4/48) gave their children liquids other than breast milk in the first three days.

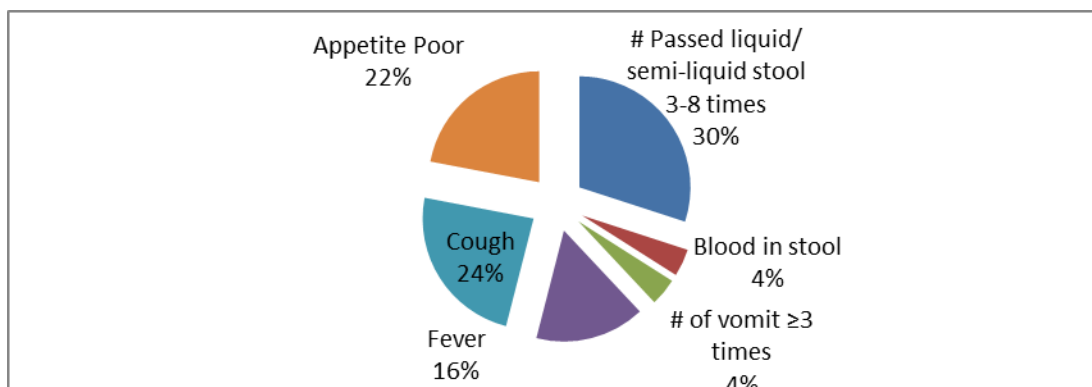
Bottle Feeding and Complementary Feeding

The KAP survey findings indicate that 42% (20/48) of the mothers gave their child something to drink from a bottle or with a nipple the day before the survey. This was more common (8/48) among children 6 to 8 months old. In more than two-thirds (34/48) of the surveyed mothers, complementary feeding, including gruel/porridge, bread/injera/shiro, and formula foods, was introduced at 6 to 8 months of age.

Child Health, Health Facility Visit, and Nutritional Status

Figure 9 summarizes the findings from the initial TIPs home interview, indicating that 24 hours prior to the survey 76% (35/46) of the children in the survey had been ill. Fifteen children had diarrhea, eight had a fever, and 12 had a cough, of which most cases were among the older age children. Only 26% (12/46) of the mothers indicated visiting the health facility in the past two weeks for any child illness. For the oldest two age groups, eight children (five from the 9 to 11 month age group and three from 12 to 23 month age group) were sick during the study period. One child had severe diarrhea and the child and mother were given transportation and a referral to the nearest health facility.

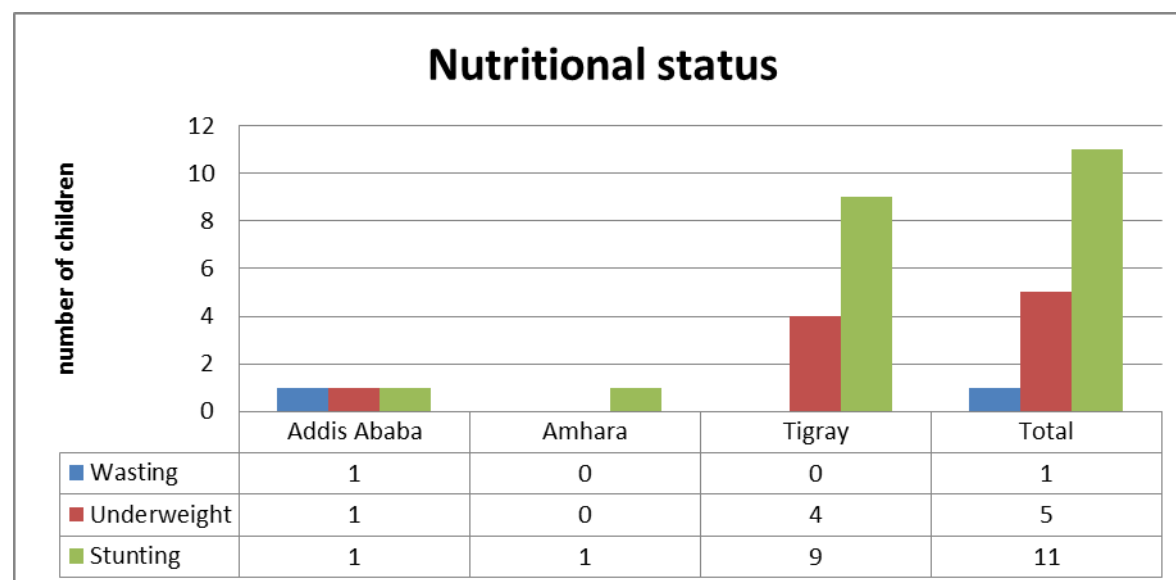
Figure 9: Percentage of children who were ill the day before the survey



Of the children of the 48 mothers surveyed during the KAP survey, 2.1% (1/48) were wasted (low weight-for-length), 10% (5/48) were underweight (low weight-for-age), and 23% (11/48) were stunted (low length-for-age). As indicated in Figure 10, sites in the Tigray region had more than half of all the children found underweight and stunted. Reported practices and respondent characteristics were homogenous across all three study regions, so it is unclear why Tigray had

more malnourished children among the study group. Parents of malnourished children identified during the study period were referred to the nearest health facility and provided transportation if needed. In addition, the mentor of their mother support group was asked to follow up with them closely until the child attained normal nutritional status.

Figure 10: Nutritional status of children under two years of age



Mothers' Dietary Diversity

During the KAP survey mothers were asked about the foods they had eaten the day prior to the survey (see Table 8), using the Women's Dietary Diversity Tool developed by the FANTA Project¹⁴. 71% (34/48) of the mothers reported consuming four or more food groups the day prior to the survey. Only 58% (7/12) of the mothers with children under six months old and 58% (7/12) of the mothers with children 12 to 23 months old ate foods from four or more food groups.

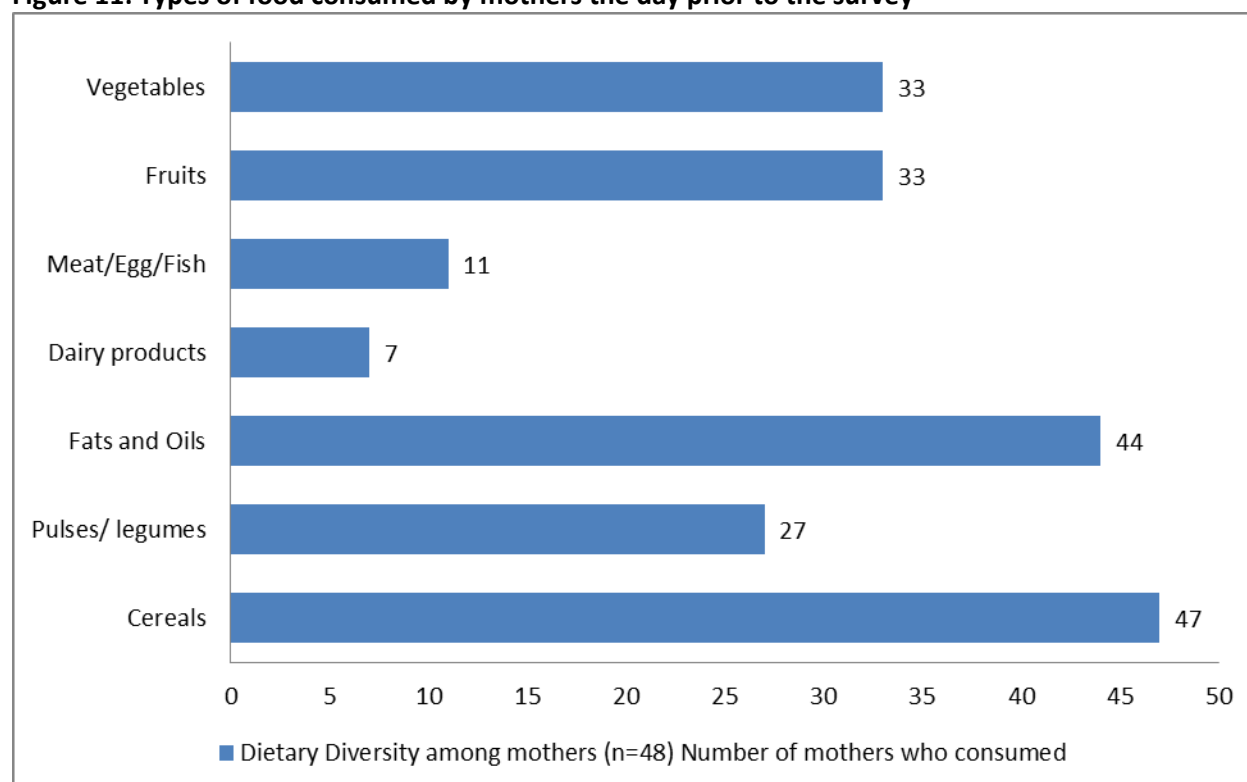
Table 8: Mothers' dietary diversity

		Age Category				Total
		0–5 months	6–8 months	9–11 months	12–23 months	
Number out of seven food groups	< four food group	5	1	3	5	14
		35.7%	7.1%	21.4%	35.7%	100.0%
	≥ four food group	7	11	9	7	34
		20.6%	32.4%	26.5%	20.6%	100.0%
	Total	12	12	12	12	48
		100.0%	100.0%	100.0%	100.0%	100.0%

¹⁴ <http://www.fantaproject.org/research/womens-dietary-diversity-project>

Almost all of the mothers reported having cereals and fats or oils the day prior to the survey. Most mothers had also consumed vegetables and fruits. Close to half of all mothers had consumed pulses or legumes. Less than half of all mothers surveyed had consumed meat, eggs, fish, or dairy. Figure 11 shows the types of food groups the mothers consumed the day prior to the survey.

Figure 11: Types of food consumed by mothers the day prior to the survey



Household Hunger Scale

The household hunger scale is a cross-culturally validated index of food security developed by the FANTA Project¹⁵. It consists of three separate indicators of food insecurity, with the frequency variables of “rarely”, “sometimes”, and “often” under each indicator. Of the 48 mothers who participated in the KAP survey, 23% (11/48) reported that they had experienced hunger in the four weeks prior to the survey, among which three stated that “often” there was no food to eat of any kind. Eight reported that “sometimes” at least one member of the household went to sleep at night hungry, while four reported that “sometimes” or “often”, at least one member of the household went the whole day and night without eating anything because of inadequate food. Table 9 shows the responses of all the mothers who participated in the study.

¹⁵ <http://www.fantaproject.org/monitoring-and-evaluation/household-hunger-scale-hhs>

Table 9: Household Hunger Scale.

		Total
	Frequency*	
No food to eat of any kind because of the lack of resources to get food	Rarely	5
	Sometimes	3
	Often	3
	Total	11
Any household member going to sleep at night hungry because there was not enough food	Rarely	2
	Sometimes	8
	Often	1
	Total	11
Any household member going a whole day and night without eating anything at all because there was not enough food	Rarely	3
	Sometimes	3
	Often	1
	Total	7

*Rarely (one to two times); Sometimes (three to ten times); Often (more than ten times)

Results of In-Depth Interviews with Key Informants

Mothers' Infant and Young Child Feeding (IYCF) Practices

In general the MSG mentors as well as the health workers agreed that mothers conduct IYCF practices. They reported that most mothers provide breast milk exclusively until six months of age and introduce semisolid/soft food at six months; breastfeeding continues after 6 months and at 9 months solid food is introduced. However, not all mothers do this strictly and many fail to breastfeed their children exclusively. The most common reason mentioned was perceived inadequacy of breast milk for the child. Mothers doubt if their breast milk is enough alone so they give their children water and milk (cow's or canned). Mothers give water to their child because they think breast milk is salty and makes the child thirsty. Sometimes, mothers give local remedies for their child, too. When children cry, mothers think that the child has a stomachache so they give fenugreek with water to calm the stomach. One participant from Addis Ababa said the following:

Since most of the mothers now come to the health center, they are told to exclusively breastfeed until six months and most usually do that. But some...they say my breast milk is not sufficient and start giving other liquids at four months, five months, or even three months at times.

After six months, mothers introduce complementary food. They commonly start with foods available in their house, starting from soft porridge prepared from different cereals (teff and corn), thin gruel, tea, or milk with bread, injera with shiro or soup, or mashed potatoes, but the most common supplementary food reported was soft porridge. Two participants describe it as follows:

Shiro fitfit prepared from shiro (not cooked) and injera after adding salt is the common food given to children for the first time. (Hagereselam)

After six months the mothers will introduce small amounts of foods like: fruits, vegetables, from different kinds of things like injera fitfit, shiro fitfit, merek fitfit. The mothers will introduce a little bit of everything, step by step and in the meanwhile the child is breastfeed until the child is two years old. (Addis Ababa)

Key informants from Addis Ababa have also mentioned that mothers give their children processed foods such as noodles, biscuits, different juices, and so on. They also mentioned that mothers give their children fried eggs and frozen and minced chicken and meat as supplementary food.

Key informants stated that most mothers follow the recommended IYCF practices by introducing complementary food at six months and continue giving a variety of foods; however, there were mothers who failed to do so. The reasons mentioned by key informants were the following: some mothers think that their breast milk is enough even after six months of age, while others fails to provide additional food even if they want to, as they do not have the means to do so. Others quit giving complementary food if the child refuses to take it.

Barriers and Facilitators to Mothers' IYCF Practices

The key informants indicated that these mothers (their clients) are very poor; some have no income at all, while others work as day laborers. The mothers' low economic status is a major barrier mentioned by the key informants, complicated by big family size. This is more prominent when the child needs additional food. According to the key informants, the mothers' situation is very sad, some depend on their husbands and others are single parents abandoned by their husbands. It is sometimes difficult to tell mothers what to feed their children. Some mothers even joke when they are told the type of food their children need to get.

For some, when we advise them to stop breastfeeding, their primary concern is "what will we feed our children after we stop breastfeeding." Most don't have a source of income; they live in churches and most are dependent. (Addis Ababa)

But not all key informants agree on this. Some believe that knowledge is as or more important than economic or food security challenges, and that mothers do not consider what is available at home as enough to provide their children a balanced diet. Thus these key informants recommend provision of appropriate education to mothers geared toward the realities of each mother and her household. These key informants strongly believe that appropriate teaching on how to prepare food with less cost can change the situation. In addition, the key informants acknowledged the mothers' strong need and willingness to provide their children with a better environment to thrive.

The other barrier mentioned by the key informants was lack of time; for mothers who have a means of income, they need to stay outside either with their children or leave their children in the neighborhood. In both cases, the children may not get the food they need.

In general, the facilitating factors the key informants mentioned for mothers to adopt the recommended IYCF practices include, improving income opportunities, providing food aid for

those who are in extreme situations, providing appropriate knowledge about IYCF practices, and preparing food on a small budget. In addition, they also recommended looking at the positive experiences of mothers who have adopted the recommended practice.

Groups Influential in Mothers' Feeding Practices

Husbands, close relatives, friends, neighbors, and the elderly in the community are considered influential in child care and feeding practice. Not all provide positive influence. Some husbands are known to provide a positive influence, and the key informants agreed that fathers must share responsibility equally with mothers in taking care of children.

Some key informants considered husbands to have a positive influence when they share responsibility, while other informants considered husbands a negative influence. The key informants acknowledged that people in the community and neighborhood have more influence in child feeding than someone from the health facility. In addition, the MSG mentors considered themselves influential and believed that their lived experience and similarity in status made them earn the trust of mothers.

Though, we tell the mothers not give anything other than breast milk. The mothers usually listen to what people in their area say. So, by the time they come to us and we ask, "did you give anything?" they say the neighborhood mothers and elderly said: "the child gets thirsty...give him water" and so I did. (Addis Ababa)

The mother support group is the most influential regarding this issue. ...The mothers can share experiences with each other which can be more effective than teaching by health workers. In addition to this, they can get advice if their husband is influencing them. They can even tell their secrets to the mothers. (Hagereselam)

The role of the community and family members is to advise mothers on proper feeding practice and encourage mothers to have their own means of income when they do not have one. They can also be involved in helping mothers out in the actual care of the child. This will be more fruitful if the mother discloses her HIV status to the family or community members, however mothers do not always disclose their status for fear of stigma.

The role of health workers in the health facilities is to provide timely counseling for the mothers on infant and child feeding, early health seeking assistance for illness, vaccinations, and personal and environmental hygiene. This counseling starts during pregnancy and continues through antenatal care.

The health workers in this health center are very nice. They tell the mothers to take care and feed their children (especially those who are HIV-negative) properly...the health package workers also show the mothers how to prepare foods like soft porridge. (Hagereselam)

All health professionals including nurses, health officers, sanitary professionals, and health extension workers should educate the mothers and community about infant feeding. They should treat infants with malnutrition and underweight with Plumpy'Nut, and lastly refer, if they can't treat the children by themselves. (Bahir Dar)

The key informants also acknowledged that the health facility provides training to the MSG mentors and health workers to counsel the mothers properly. According to the key informants, the health facility provides food aid assistance to mothers with HIV and creates a link with other aid organizations to support mothers and facilitate services. However, food aid assistance was not reported by all key informants—a few from Addis Ababa mentioned that the food aid has

not yet started in their health center. In addition, some key informants have witnessed income generation training to mothers with HIV.

MSG mentors train all women with HIV enrolled in the MSG on a 12-module training package. Their main role regarding IYCF is counseling mothers on recommended feeding practices. They also teach mothers with HIV on proper intake of medicine, personal hygiene, and help mothers to engage in income-generating activities. The MSG mentors make household visits and check if mothers are following the recommended practices and even show them how to cook food for their children. For those mothers who have just learned about their HIV status for the first time, they provide counseling on positive living and comfort them by telling them their status as well.

Our role is to give good advice and link mothers with different PLWHA associations like Mekdem and Tesfagoh. (Bahir Dar)

We receive the mothers warmly; there is a coffee ceremony where we teach the mothers. We are like a family, we visit each other, if one is missing will go visit that mother. We advise the mothers to use condoms and family planning methods. Some mothers don't consider themselves a human being after they know they are HIV-positive, so it's the role of the mentor mothers to support them and give them hope. (Addis Ababa)

The MSG mentors have a vital role in this issue, because they know what the mothers want to know and have the same status and experience with the mothers and can create better trust and understanding. The mothers accept the opinions and instructions given by the mentors easily. So their role cannot be replaced by other health workers or community members. (Mekele)

Feeding a Child during Illness and Recovery

The key informants agreed that feeding practices during illness depends on the type of illness the child has and the age of the child during the illness. Accordingly, the child should get all kinds of available foods in the household. For children less than six months old, breastfeeding should increase and if a child has diarrhea, oral rehydration solution (ORS) must be added. For children older than six months, both breast milk and other foods should be given by increasing the amount and frequency. Almost all key informants emphasized the importance of increasing fluids in the form of liquid foods and drinks irrespective of the illness the child has. One key informant recommended giving a multivitamin to sick children, as they lose their appetite, and another participant recommended avoiding tomatoes and uncooked food during illness.

If the child has an upper respiratory tract infection, cough, or cold, what we advise the mother is to put some honey in tea or some peanut butter and give to the child. If the mother is breastfeeding we tell her to increase the amount. If she can get oranges, to make an orange juice and heat it up and give to the child, and increase the amount of fluid intake. If the child has diarrhea, we tell her to start giving ORS, different kinds of fluid, and increase the amount of breastfeeding. (Addis Ababa)

The key informants indicated that all foods are good for children as long as raw foods and leftovers are not served. A few listed some foods to avoid: fatty foods such as oil and butter (only in small amounts) are recommended; potato for children less than nine months old, lentils, unmashed meat, and cabbage; one participant also mentioned alcohol and coffee as food items to be avoided for children. The raw foods such as salad and raw meat should also be avoided.

Foods that are considered bad are lentils, potato wot, raw meat and cabbage; good foods are fruits (orange, banana, mango, papaya, and juices), injera with shiro, fish, and meat. (Bahir Dar)

There are foods which are good for a child, but there is such a thing as bad food. Eggs, meat, milk, fruits, and legumes such as beans and barley are good. Of course raw foods are not given to children, like raw meat and raw milk; it is not even advised for adults. (Addis Ababa)

Key Informants' IYCF Recommendations to HIV-Positive Mothers

All the key informants recommended exclusive breastfeeding until the child becomes six months old, and then complementary feeding afterwards. They encourage breastfeeding until 14 to 24 months together with the additional food and solid food when the child becomes 9 to 12 months old. The participants also strongly recommend mothers to give colostrum to their newborn, however only one participant mentioned the timing. This participant suggests that a newborn should get colostrum within four hours after birth:

The mother must give colostrum to the infant within four hours after delivery (because colostrum is like a vaccination) and give only breast milk without any additional food or water until six months, at least 12 times a day. After six months, supplementary foods which are prepared cleanly and properly should be given in addition to breast milk since the child needs more food than usual. If mothers follow the above stated practices, their children can grow in good health. (Hageresalam)

In relation to feeding practices, the key informants recommended that mothers should focus on hygiene. According to informants, mothers should keep their household utensils and themselves clean while they prepare food and feed their child.

The key informants recommended that mothers should also check the health of their breasts regularly and see a health worker if they see any problems. She should also check her child's mouth and seek medical care if she sees any lacerations or sores. This will help prevent transmission of HIV during breastfeeding.

The key informants also emphasized the importance of seeking medical care when both the mother and the child get sick. They advise mothers to stop giving homemade remedies when their children are sick. They believe that mothers should keep themselves healthy and take their follow-ups at the health facility seriously. In addition, the participants encourage mothers to use some kind of contraceptive method to prevent unwanted pregnancy. One key informant stated:

A mother with HIV should use condoms even while breastfeeding in order to prevent another pregnancy, she should use family planning. She should always go for her follow-ups, and regularly check her CD4 count. When the child starts complimentary feeding she should keep her personal hygiene and the cooking clean. I will also advise her to wash her hands with soap and water before preparing the child's meal and also keep the serving plates clean. (Addis Ababa)

Results of Trials of Improved Practices (TIPs)

Perceptions of Child Feeding

Many mothers in this study indicated that their children's appetite was very good and that they took food very well. They mentioned that their child needed to be fed every two hours if they are breastfed, when they wake up from their sleep, are crying, suck their finger, or ask for food.

One mother stated, “I feed my child whenever my breast has milk, when the child is crying, or about to sleep.”

Most of the participating mothers said they knew that their child was full when the child refused to take anything, turned his face away from the food, pushed the meal with his mouth or hand, or spat.

When a child refuses to eat, the mothers suggested playing with the child or with other children so that the child gets envious; changing the ingredients of the food such as porridge or type of cereals used; cuddling them; and very few mentioned force feeding. If all these techniques do not work, then most mentioned taking the child to a health facility and discussing the issue with a health professional.

Perceived Belief/Attitude toward Healthy and Unhealthy Foods

The mothers participating in this study listed a number of food items, varying from meat to cereals and fruits, as unhealthy foods for children. Foods considered unhealthy included any kind of meat (chicken, fish), oily foods, salty foods, pepper/chili, honey, egg, kollo (roasted cereals), banana, and tomato. The mothers claimed that these foods cause some kind of complaint in the gastrointestinal system which may be related to difficulty in swallowing, heavy to digest resulting in abdominal cramp or distension, vomiting, or diarrhea. All of these foods’ perceived effects are, in most instances, thought to bring no harm if consumed by children above two years of age and worsens the health status of an already sick child, but is not sex specific.

Still a wide variety of fruits (banana, avocado, orange, mango), vegetables (carrot, potato, cabbage), egg, meat, macaroni, pasta, pastini, noodles, milk, legumes (lentil, chick pea), family food (injera with shiro) were described as healthy foods by most mothers. These foods have been claimed to give strength and healthy growth by providing adequate energy, bone strength, preventing disease, and ease in digestibility. Though many mothers believe that these foods should be given to all children of all age groups, few restricted them to children above two years old; all agreed that there is no sex difference and most perceive it good for sick children to help them get better.

The main sources of information influencing the mothers’ perceptions of which foods are healthy and unhealthy are: health professionals, the health facility, neighbors, the elderly, school, TV, radio, MSG mentors, and from their own experiences and their general knowledge.

Overview of Trial of Improved Practice (TIPs)

The recommendations that the mothers agreed to try are summarized in tables by age range and region in Annex 1. Most of the recommendations focused on improved breastfeeding practices, giving children more nutrient-dense porridge, feeding more frequently, and feeding an increased variety of family foods. Among this group, most of the mothers tried, liked, and adopted the practices they discussed with the study teams during the second counseling TIPS household visit.

TIPs Results by Age Group with Specific Recommendations

To see a full list of recommendation results broken down by region and age group, please see Annex 1. Characteristics of the study participants, findings and recommendations are similar

across regions, however the specific recommendations varied slightly according to the team giving them, hence the separation by region in the annex.

Zero to Five months old

Recommendation 1: Take more time to breastfeed at each feeding; use both breasts at each feeding and feed until the breasts are soft.

Among the seven mothers who tried this recommendation, one reportedly practiced it for 14 days after counseling. She liked the recommendation and adopted it. She said, “while I breastfeeding one breast to satiety, the other fills up and I like that. The other thing is I am noticing changes in my child’s growth since I started to feed her till satiety, and as a result, I think it is a nice practice.” She also noted additional benefits of this practice such as having a happy child who sleeps well and gives her some time to carry out the household chores.

Recommendation 2: Refrain from giving liquids and foods other than breast milk to the baby for the first six months.

There was only one mother who was offering mixed feeding to her five month old child. She agreed to cease giving any liquid other than breast milk. She liked the outcome of the recommendation as she claimed that her child did not have any episodes of diarrhea or any other unwanted effect from the practice. She adopted the practice and said that she will continue to give only breast milk to her child until six months of age and will advise other mothers with HIV with the same recommendation.

Recommendation 3: Make sure the baby is attaching correctly to the nipple (with wide open mouth, nipple far inside the mouth) at each feeding.

One mother tried and adopted this recommendation. She liked this practice as she claims to feed her child longer and no longer feels pain on her back/waist area which made it easy for her to carry out the behavior. She added, “I am motivated to put it in practice and my child is sleeping with a full stomach.” She was ready to tell other mothers in the community about the benefit she has observed on herself.

Recommendation 4: Sit comfortably with your back supported or lie down comfortably when you feed. Support the baby with baby’s tummy against your tummy and hold the baby and be relaxed while breastfeeding. Use the C hold to hold your breast if needed.

All three mothers who were counseled on this recommendation tried, liked, and adopted it. One mother explained, “It is very comfortable for me and it’s comfortable for my child too. Plus she will be full enough.” Another mother noted added benefits of avoiding back pain and feeding freely upon appropriate sitting position. She continued by advising other mothers in the community to practice it as it avoids dizziness and that the baby suckles more milk.

Recommendation 5: Increase the frequency of breastfeeding during and after illness while the baby is recovering.

Three mothers were counseled to practice this recommendation if their child becomes sick. None of the children in this age group were sick during the study period.

Six to Eight months old

Recommendation 1: Mash other foods prepared for the family, such as carrots or potatoes, and give to the baby.

Three mothers were counseled to try this recommendation. All of the mothers tried and liked it but none of them adopted it. It was a financial problem which held them back from giving food daily to their children. One mother said, “I wish I could feed my child these things but I couldn’t always feed him such food because I have financial problems. What I meant by financial problem

is that I don't have a job and there is no one supporting me financially. The only income I have comes from the rare laundry job I do for some people. Both I and my child are currently eating at church 'senbete bet' and we eat whatever is available there."

Recommendation 2: Offer mashed fruits such as banana, mango, avocado, papaya, or others.

Five mothers were counseled to give mashed fruits but only two practiced and adopted it. Except for the fact that fruits are relatively expensive, the mothers liked it and would give the same advice to other mothers in the community.

Recommendation 3: Add mashed vegetables (at least two tablespoons) from those cooked for the family (cabbages, salad, tomatoes) to the baby's porridge.

Of the two mothers who were counseled to add mashed vegetables to their baby's porridge, only one tried and liked it. She also added egg in the porridge. She confirmed the ease of eating by the child saying, "Giving smashed carrot, potato, and egg is good. It is much better from injera. It is easy to eat and after all she started taking other foods." This mother did not like the addition of egg as much as the vegetables, as the child did not eat much of the egg in most instances.

Recommendation 4: Stop using a feeding bottle; use a cup instead.

Out of the two mothers who were counseled to use a cup for feeding, only one liked and adopted the practice. She said, "A cup is easy to clean; I wash it and immediately feed with it so it doesn't get dirty. The foods do not stay longer inside the cup, she finishes it, and this is what I like." The fact that boiling the cup was not a requirement made it simple and easy. In addition, washing with soap did not take much time and could be done frequently. She mentioned that she would tell other mothers in the community about the healthier effect of feeding with cup as compared to bottle feeding.

Recommendation 5: Feed the baby a "combined" thick mashed food; thick porridge made of a mix of cereals, mitin with an egg, potato, or cowpeas. Don't give watery porridge or atmit.

One of the mothers who practiced this behavior explained the effect of feeding thin porridge as production of "too much urine." She has seen improvement in her child's weight and appetite upon following this recommendation. She also added the time to prepare the thick porridge was not long and would continue to give it to the child as the infant is not currently breastfeeding and was shown to be feeding comfortably. Despite all this, the mother was worried about the financial constraints to buy and add the vegetables and a possible perceived emetic effect of potato. When asked about what she would tell to other mothers in the community, she said, "I will tell them that they need to feed a balanced diet to their baby, give a balanced diet in a form of porridge because it is important for the health well-being of the baby." The other mother did not like adding any other food to porridge as she claimed that her child does not like it.

Recommendation 6: Offer a full coffee (buna) cup of porridge made from mixed cereals or mitin enriched with oil/butter and iodized salt at each meal (if two meals are fed to the baby each day, feed one coffee (buna) cup of enriched porridge at each meal).

Only one mother tried the recommendation and confirmed that the preparation can be carried out and was good for children as her child became strong and playful. Though she had the intention to adopt the practice, she reported that she has no sufficient money to practice the recommendation and may not be able to prepare the food while away from home.

Recommendation 7: Take more time to breastfeed at each feeding; use both breasts at each feeding and feed until the breasts are soft.

All three mothers counseled on this behavior liked and adopted it. One mother's reason for liking this recommendation was, "breastfeeding to satiety is good. I think it is important for her

health. But if I change to short duration, she only gets the water part, which just makes her full of pee.” The other mothers pointed out the added benefit of the practice in making the child stronger, happier, sleeping for longer hours with full stomach, and more time for the mother to rest. Only one of them expressed certain difficulty during the practice, as she was often called on to help on food preparation for the church where she lives in. One mother commented on this behavior saying, “I would like to say how important breastfeeding is in the society. There is this perception that a mother with HIV-positive status must not breastfeed her child. In fact, people do not suspect I have HIV because I am breastfeeding. So I would like to stress that all mothers regardless of their HIV status must breastfeed their child and mothers with HIV must do it with great care.”

Nine to 11 months old

Recommendation 1: Give the baby the same vegetables you cook for your family (mashed); do not give the cooking water.

Nine mothers were counseled to give their children the mashed vegetables they cook for their own family. Eight mothers tried but only four adopted the practice. One mother reported that she gave her child mashed potato and also believed in the importance of giving a variety food for strength and mental development said, “I am happy since my son eats the food. He didn’t use to take anything before except milk, but now the price I spend for milk has also reduced.”

Recommendation 2: Stop using a feeding bottle, instead use a cup.

There were four mothers who were giving their children a bottle and all were counseled to cease this practice and replace the bottle with a cup. Three of the mothers tried and liked the practice but only one adopted it. One mother explained that she liked the cup instead of the bottle and said, “It is easy to clean; I wash it and immediately after serving with it so it doesn’t get dirty. The foods do not stay longer inside the cup, my child finishes it, and this is what I like.” Another mother agreed about the benefit and explained what she would advise other mothers in the community, “I will tell them that they should stop bottle feeding and start feeding with cup; so that they will have healthy babies.”

Recommendation 3: Offer all the family foods, including shiro wot with injera and vegetables, and meat or fish. Chop and mash foods for the baby.

Out of the five mothers who were counseled, three tried the practice, and only two adopted it. One mother liked giving mashed carrot and potato, as she thought that her child who had diarrhea got better. She also said that fish and meat were useful for her child’s health and growth. The other mother explained how mashed foods were simple to give and easy to prepare by saying, “I like to give my baby mashed potato because it’s easy to prepare and easy to swallow.” However, one mother said that she lived alone and lacked adequate time and financial resources to go to the market to buy potatoes—circumstances that make the behavior hard to practice—while another mother pointed out that fish or meat are expensive and require a refrigerator to keep them. She said, “it is difficult to give daily, as meat/fish is kind of expensive in comparison with other foods. Therefore, it is difficult to give frequently. In addition, I can’t buy only for him and I have no refrigerator to keep meat for long days, as it will be spoiled.” One of the mothers said she would give advice to other mothers in the community on giving family foods for the child in small amounts, as it is these foods that are important for mental development.

Recommendation 4: Give mashed fruits such as banana, mango, avocado, papaya, or other.

Four mothers were counseled to give mashed fruits, of whom two tried and liked the practice, and one adopted it. Though the mothers claimed that there was a popular notion among their community that fruits can cause childhood diarrhea, two mothers were happy that their children

were comfortable eating fruit, and one mother reported that banana is good for disease prevention. Three of the mothers pointed out that the price of the fruit makes it hard to practice the behavior and one expressed her fear as, “what if she enjoyed eating orange and banana daily and I can’t provide them for her? ... Currently she is refusing to take the fruit so why would I have to waste my money. If she doesn’t want to eat it then there is no use and it will be garbage. You know how much one orange is?—Two birr! I could save this money for other things.”

Recommendation 5: Give porridge enriched with cow milk.

Six mothers were counseled to give porridge enriched with milk. Four mothers tried and liked the practice, and three adopted it. Three of the mothers gave their reasons for liking this recommendation by saying, “Porridge with milk makes the baby to be strong; and gives energy.” One mother pointed out that enriching porridge does not consume much time and can be prepared quickly. She continued on the benefits by observing that her baby gets satisfied after eating the enriched porridge. It does not disturb his digestion and made him stronger and healthy, which helps her keep doing the behavior. In places where finding milk is not easy due to scarce financial resources or a distant location, it was hard to practice the behavior. One mother had the intention to share with other mothers in the community her experience of her baby being strong and healthy upon eating enriched porridge with milk.

Recommendation 6: Add eggs, cooking oil, or groundnut/soy to the baby’s porridge.

Two mothers were counseled and both adopted the practice. One mother claimed that as her baby was not eating the porridge with egg appropriately, she did not like the behavior. But adding oil to the porridge wasn’t difficult, as the porridge is prepared daily, easy to make, and easy to swallow. One mother pointed out that porridge is good because she needs to see her child grow fast and healthy—a reason she wants to share with other mothers in the community.

Recommendation 7: Take more time to breastfeed at each feeding; use both breasts at each feeding and feed until the breasts are soft.

Two mothers were counseled on breastfeeding practice, and one of them adopted it. This mother liked to practice the behavior as she believed that breast milk is important for her child’s health and satisfaction, and it does not have an added cost. The other mother developed a skin lesion on a nipple during the trial, and refrained from continued breastfeeding said, “if the child sucks empty breast, blood may come out—that’s my fear.” She preferred giving mashed vegetables to breastfeeding for fear of transmitting the virus.

Recommendation 8: Offer the child’s favorite foods, increase the frequency and amount of liquids and food, during and after the illness while the child is recovering.

Only one mother adopted the practice during the trial period out of the three who were counseled. One mother who liked the behavior said, “increasing food during illness gives energy, replaces the fluid lost and helps my baby from further damage.” According to the mother who adopted the practice, it was easy to prepare the child’s favorite food, as she prepares shiro by herself and the cost of the vegetable was relatively cheap. She would also advise the same behavior for other mothers as she claims to be a beneficiary in the practice and claimed that her baby grows strong upon continued feeding during illness.

Twelve to 23 months old

Recommendation 1: Add different available vegetables to the child’s food, such as carrots, spinach, or others.

Six mothers were counseled to add different vegetables, such as carrot or spinach to the child’s food. Though all of them tried and liked it, only half of them adopted the practice. One mother who previously didn’t know that spinach could be mashed with other vegetables (like potato),

reported that the practice was beneficial to her as well as her child in that it does not take much time to prepare and can be given as a complementary food along with breast milk.

Recommendation 2: Offer the child's favorite foods, increase the frequency and amount of liquids and food, during and after the illness while the child is recovering.

Three mothers whose children were sick were counseled to offer and serve more food and liquid and two mothers reported that they tried and liked the practice. One mother who still breastfed claimed that this practice is beneficial to all in that it is cost effective as there is no extra cost incurred in breastfeeding more frequently. It also helps the child grow strong and bright.

Recommendation 3: Feed your child the same foods that you give to the rest of the family; chop and mash the foods for the baby.

Three mothers were counseled about this practice, but only one tried and liked it. She gave mashed vegetables like spinach, and her child was happy to eat it which made her happy too. Though none of the mothers disliked the recommendation, financial constraints made it hard to practice the behavior. One mother pointed out that preparing mashed vegetables from the food cooked for the family was easy.

Recommendation 4: Add fat to the vegetables or offer a portion of avocado pear to the child each day.

Four mothers were counseled; three tried the practice and liked it. One of the mothers liked the practice as it was new for her. The mothers reported the fact that the small amount of oil needed to prepare food for a child made it easy, though the lack of sufficient money to buy and serve the vegetables on daily basis or unavailability of merchants who sell vegetables in the vicinity made it difficult. One mother pointed out that adding oil to her child's food had improved the child's appetite. She also mentioned she would tell other mothers about the advantage of adding oil or butter to children's food in that it brings about good health in a baby.

Recommendation 5: Give a snack such as fruit, porridge, or potato.

One mother was counseled on this practice. She reported that she liked the way her child played "like an adult" after eating the snacks. Lack of adequate money to buy fruits and vegetables is the reason which makes hard to practice the behavior. Despite this, she observed a marked advantage of the practice in that her child had become strong, happy, and playful.

Recommendation 6: Offer a piece of fruit daily.

Two mothers were counseled to give fruit on daily basis. Both mothers liked the practice as they believed fruit is good for the health of a child. As with vegetables, lack of sufficient money to buy the fruit daily was hindering the mothers from adopting the behavior. One mother agreed to advise mothers in the community to feed their children fruit as it helps them to avoid childhood sickness.

Recommendation 7: Give an egg each day.

Two mothers were counseled to give an egg a day, and both tried and liked it. One mother expressed her reason by saying, "I like giving egg since it has carbohydrates. She has different potential when she eats egg." One mother observed her child being bored with eggs when given eggs frequently, which prevented her from adopting the practice

Recommendation 8: Provide the child's food to him/her in a separate bowl/plate.

Three mothers were counseled to give the child food in a separate bowl or plate. Three mothers tried and one adopted the practice. One mother who liked the practice said, “she eats indomin (noodles) well when given on her own plate. This way I know how much she has to eat and that I have to encourage her to finish it.” Another mother expressed her dislike by saying, “if she wants to eat injera, she likes eating it with the other kids, since we are usually eating at other people’s houses.”

***Recommendation 9:** Increase the amount of food you feed to the child at each meal. Offer up to two full coffee (buna) cups of food at each meal.*

Three mothers were counseled to increase the amount of food they offer their child at each meal. Only two of them tried the behavior. One mother explained why she likes the practice by saying, “I feel happy when she eats more than previously because it will make her healthier and grow.” One of the mothers mentioned that lack of sufficient time was the hard thing to put the behavior into practice. Despite this, she had noticed that her child had a good appetite for increased food and wanted to continue the practice, as her child was going to be weaned off breastfeeding soon, and also wanted her child to become strong.

***Recommendation 10:** Stay with the child during meals and help encourage the child to finish meals; be patient.*

One mother was counseled to practice this behavior. It was hard for her to practice this behavior as the child eats better with other kids. She said, “she is not used to feeding herself. I am the one who feeds her. The only time she gets motivated to eat on her own is when she dines with other kids. So it is difficult to know her exact portion. But I am happy about her eating with others because that is when she eats the most.”

***Recommendation 11:** Offer the child’s favorite foods, increase the frequency and amount of liquids and food, during and after the illness while the child is recovering.*

Two mothers were counseled on this behavior both of whom tried and liked it. One mother reported that when she fed her sick child frequently, the child regained his appetite. The other mother said, “care during illness for a child is necessary, especially concerning feeding.” However, one mother claimed that her child refused frequent feeding during sickness and this made it hard to practice the behavior.

TIPs and the 24-Hour Diet Recall Analysis

Twenty-four-hour diet recalls for the children of participating mothers were performed twice during the TIPs, one before and one after the fourteen day trial period in which mothers practiced the improved feeding recommendations that they chose from the options presented to them (see Table 10). Marked improvement in protein, iron and calcium intake was observed during the study period. However, only two children met 100% of the median energy recommendation during the TIPs follow-up visit—increased from 1 child during the initial TIPs visit. The percentage of energy from carbohydrate increased overall between visits while the percentage of energy from fat decreased between visits.

Table 10: 24-hour diet recall analysis: Mean intakes and TIPs among children 6 to 23 months old.

	TIPs Initial (n = 34)			TIPs Follow-up Visit (n = 35)		
	Number (%) of children consuming 67% or more of the recommended intake	Mean intake	SD	Number (%) of children consuming 67% or more of the recommended intake	Mean intake	SD
Protein (gm)	8 (23.5%)	3.07	3.33	17 (48.6%)	5.38	5.13
Iron (mg)	8 (23.5%)	6.94	12.83	17 (48.6%)	15.11	16.86
Vitamin C (mg)	14 (41.2%)	2.90	5.32	12 (34.3%)	2.65	3.29
Calcium (mg)	0	36.34	46.79	2 (5.7%)	58.92	60.58
	Number (%) of children who met 100% or more of median energy recommendation	Mean intake	SD	Number (%) of children who met 100% or more of median energy recommendation	Mean intake	SD
Average energy intake	1 (2.9%)	133.13	132.70	2 (5.7%)	243.37	197.02
	% of Energy from Carbohydrate			% of Energy from Carbohydrate		
Carbohydrate (gm)	68.76	25.62	26.28	77.68	51.45	43.85
	% of Energy from Fat			% of Energy from Fat		
Fat (gm)	14.82	2.11	2.76	10.45	1.97	2.04

Note: Vitamin A-rich fruits and vegetables were recommended to some mothers during the TIPs period, and consumption data was captured in the 24-hour dietary recall, but as the Ethiopian Food Value Tables do not contain values for vitamin A, changes in consumption of vitamin A could not be calculated accurately.

Challenges during data collection

A few challenges during the data collection process required prompt action and were managed as they arose.

During sampling of mothers with a certain child age category, it was found that in some of the MSG sites' (namely Shinbit from Bahir Dar, Alem Bank from Addis Ababa, and Mekelle) eligible participants could not be obtained. When this occurred, a greater number of mothers from the other study site in the same region were randomly selected.

In the Mekelle and Hagereselam MSG sites in Tigray region, one age category (9 to 11 months) was short of one mother in each site. These sites could not be compensated from other sites during the Phase 1 data collection period, but the research team identified eligible mothers and administered the two KAP surveys before starting Phase 2.

In Addis Ababa, one health worker could not be interviewed for IDI as she was out on maternity leave during the study period.

TIPs initial interview: It was a bit challenging to locate the houses of some mothers in all sites for the first home visit. Heavy rain, flooding, and distance were among the challenges. All 16 mothers from each region were interviewed for the initial TIPs except for two in Addis Ababa—one due to severe illness and one who dropped out of the study.

TIPs Counseling and Final Visits: One mother from Hagereselam was asked to come to the health facility during the second visit, as the journey to her house was very challenging and she came to town for other errands as well. The final visit was conducted in her home.

While all 16 mothers were visited in the Tigray region for the final visit, only 15 mothers were interviewed at Bahir Dar as one dropped out due to severe illness and consequent hospital admission. Generally, mothers in Addis Ababa were the least comfortable with the research team coming to their home due to fear of stigma. Thus, though all mothers in the study gave informed consent which included home visits, the research team could only complete the TIPs process with 11 mothers in Addis Ababa.

Conclusions

Most mothers living with HIV were exclusively breastfeeding their children until six months. The breastfeeding technique of the mothers did not follow best practices. For the first six months of age, the recommendations focused on to take more time to breastfeed at each feeding, to use both breasts at each feeding and feed until the breasts are soft. The responses to these recommendations were very positive and mothers explained the practices helped them to produce more milk and satisfy the baby need.

Most of the mothers start providing complimentary food for their baby at six months of age and they are giving porridge as the primary food. A significant problem is the quality of the porridge, it is diluted and unenriched. For children in this age group (6 -24 months), the recommendations focused on increasing the amount of food and the diversity through adding other locally available foods like meat, fish, fruits and vegetables. To help monitor the amount of food provided, it was also recommended that mothers use a separate plate or bowl for the child. Overall responses were positive and mothers were supportive of the new practices and convinced that they would be beneficial to their children. However, implementation of all of the new practices was not evident in the 24-hour recalls conducted in the follow-up visits mainly due to financial constraints. The improved practices that were most commonly documented for an individual child in the last visit included: offering larger quantities of food than those offered in the first visit and adding some additional variety in the child's diet through providing egg, milk, fruit or vegetable as a snack or as part of the meal. These improvements translated into an increase in the amount of Iron and calcium available through the child's food and in the energy available for growth.

The trials were successful and showed again that mothers are willing to try to improve their child's diet with household foods and they were willing to spend time to actively feed their children. The cost of the food prohibited some mothers from doing more, although cost is a factor for all.

Recommendations Based on Findings

The findings from the IDI's with health workers and mother support group mentors (who are HIV-positive mothers as well, providing an additional perspective in their responses) indicate that they are knowledgeable about optimal IYCF in the context of HIV and comfortable in their role as counselors to HIV-positive mothers. However they are concerned about conflicting advice which mothers may receive from neighbors and family members. Mid- and mass-media campaigns targeted to communities improving awareness that following health workers' advice about IYCF improves the HIV-free survival, nutrition, and health of HIV-exposed children could help add additional support to mothers to follow health worker recommendations.

Key informants are also concerned that mothers who are food insecure find it difficult to follow their IYCF recommendations. This study indicates that while most mothers can improve feeding and caring practices within their current resources, there is a group of food insecure mothers (20% of the small study sample) who will need additional support to practice optimal IYCF. The C-PMTCT project has mechanisms in place to identify these mothers and to link them with the national Productive Safety Net Program, and other local food security and income generating programs, and this will continue to be essential for food insecure HIV-positive mothers to improve the health and nutrition of their children.

- Continue to support mothers to exclusively breastfeed until six months of age, and continue breastfeeding after complementary foods are introduced at six months until the recommended age.
 - Spend time with mothers on correct positioning of themselves as well as the baby, and correct nipple attachment, so that they are more comfortable while breastfeeding, and to prevent nipple irritation.
 - Repeatedly emphasize that if mothers feel insecure about the amount of breastmilk they are producing, feeding more often, and feeding each time until the breast is soft, will increase the amount of milk they produce.
 - Continue to counsel mothers about breast health, so that they promptly stop feeding from breasts affected, and seek medical care for breast problems and oral problems in their infants.
- Focus on specific complementary feeding practices to ensure optimal growth of the child. Areas for special emphasis are:
 - Counseling on preparation of semisolid foods (porridge) with the right consistency and density.
 - Focus counseling on increasing the total daily amount fed as well as the variety and quality of foods, so that children's minimum energy needs are being met each day.
 - Better use of family food could be made from foods already prepared for the family, including meat and fish. The family foods can be mashed and given to the child instead of separate food preparation completely.
 - Promotion of specific fruits and vegetables that are available (potato, carrot, cabbage, orange, banana). Promoting legumes (beans/peas/pulses) and promoting feeding children eggs several times a week depending on local availability and affordability.
 - Attention to avoiding the practice of bottle feeding and support use of cups and spoons.
 - Increase awareness of the importance of continued feeding during illness, and giving extra food for two weeks after illness.

- Educate mothers on good foods to bring about change in the perception of foods considered to be bad for children and achievement of better health.
- Design activities that will build mothers' confidence and feeling of self-efficacy in preparing suitable foods for their children using all the family foods through modeling of such practices by the MSG mentors. Mothers have a rooted trust in MSG mentors and thus can be convinced by looking at the MSG mentors' successful experience.
- Involve mothers in income-generating activities to support and enable them to buy fruits, vegetables, eggs, meat and fish, and other household items.
- Continue current practice of training of MSG mentors together with nurses in order for them to all have consistent messages and materials.
- Future studies should collect more information on maternal nutrition and maternal nutrition should be given due emphases in future programs.

Annex 1. Tables of TIPs recommendations by age of child and region

Table A1: TIPs recommendations and follow up: children 0 to 5 months, Addis Ababa.

Recommendation Offered	Accepted	Tried	Liked	Adopted
Take more time to breastfeed at each feeding; use both breasts at each feeding and feed until the breasts are soft	4	3	3	3
Sit comfortably with your back supported or lie down comfortably when you feed. Support the baby with baby's tummy against your tummy and hold the baby and be relaxed while breastfeeding. Use the C hold to hold your breast if needed	1	1	1	1
Make sure the baby is attaching correctly to the nipple (with wide open mouth, nipple far inside the mouth) at each feeding	1	1	1	1
Increase the frequency of breastfeeding during and after illness while your baby is recovering	3	0	0	0

Table A2: TIPs recommendations and follow-up: children 0 to 5 months, Amhara.

Recommendation Offered	Accepted	Tried	Liked	Adopted
Phase out the formula slowly over the trial period (14) days and replace with additional breast feeds; at least eight breast feedings per day	1	1	1	1
Refrain from giving liquids and foods other than breast milk to your baby 0–5 months old	1	1	1	1
Take more time to breastfeed at each feeding; use both breasts at each feeding and feed until the breasts are soft	4	1	1	1
Sit comfortably with your back supported or lie down comfortably when you feed. Support the baby with baby's tummy against your tummy and hold the baby and be relaxed while breastfeeding. Use the C hold to hold your breast if needed	1,	1	1	1

Table A3: TIPs recommendations and follow-up: children 0 to 5 months, Tigray.

Recommendation Offered	Accepted	Tried	Liked	Adopted
Take more time to breastfeed at each feeding; use both breasts at each feeding and feed until the breasts are soft	4	3	3	3
Sit comfortably with your back supported or lie down comfortably when you feed. Support the baby with baby's tummy against your tummy and hold the baby and be relaxed while breastfeeding. Use the C hold to hold your breast if needed	1	1	1	1

Table A4: TIPs recommendations and follow-up: children 6 to 8 months , Addis Ababa.

Recommendation Offered	Accepted	Tried	Liked	Adopted
Mash other foods prepared for the family, such as carrots or potatoes and give to baby	1	1	1	0
Offer mashed fruits such as banana, mango, avocado, papaya, or other	1	0	0	0
Stop using a feeding bottle; use a cup instead	1	1	1	1
Feed your baby a "combined" thick mashed, food; thick porridge made of a mix of cereals "Mitin" with an egg, potato, or cowpeas; don't give watery porridge or Atmit	1	1	1	1
Take more time to breastfeed at each feeding; use both breasts at each feeding and feed until the breasts are soft	2	2	2	2

Table A5: TIPs recommendations and follow-up: children 6 to 8 months, Amhara.

Recommendation Offered	Accepted	Tried	Liked	Adopted
Mash other foods prepared for the family, such as carrots or potatoes and give to baby	1	1	1	1
Offer mashed fruits such as banana, mango, avocado, papaya, or other	2	1	0	0
Add mashed vegetables (at least two tablespoons) from those cooked for the family (cabbages, salad, tomatoes) to your baby's porridge	2	1	1	0
Take more time to breastfeed at each feeding; use both breasts at each feeding and feed until the breasts are soft	2	1	1	1

Table A6: TIPs recommendations and follow-up: children 6 to 8 months, Tigray.

Recommendation Offered	Accepted	Tried	Liked	Adopted
Mash other foods prepared for the family, such as carrots or potatoes and give to baby	1	1	1	1
Offer mashed fruits such as banana, mango, avocado, papaya, or other	2	1	1	0
Add butter/oil to your porridge	1	1		
Stop using a feeding bottle; use a cup instead	1	0	0	0
Feed your baby a “combined” thick mashed food; thick porridge made of a mix of cereals, “Mitin” with an egg, potato, or cowpeas; don’t give watery porridge or Atmit	1	0	0	0
Offer a full buna cup of porridge made from mixed cereals or Mitin enriched with oil/butter and iodized salt at each meal; if two meals are fed to baby each day, feed one buna cup of enriched porridge at each meal	1	1	0	0
Continue to breastfeed six to eight times per day.	2	1	1	0

Table A7: TIPs recommendations and follow-up: children 9 to 11 months, Addis Ababa.

Recommendation Offered	Accepted	Tried	Liked	Adopted
Give your baby the same vegetables you cook for your family (mashed); do not give the cooking water	2	2	2	0
Offer all the family foods, including shiro wot with injera with vegetable, and meat or fish. Chop and mash foods for baby	1	0	0	0
Give mashed fruits such as banana, mango, avocado, papaya, or other	1	1	1	1
Give porridge enriched with milk	3	1	1	0
Stop using a feeding bottle instead use a cup	2	1	1	1
Offer child’s favorite foods, increase the frequency and amount of liquids and food, during and after the illness while the child is recovering	2	0	0	0

Table A8: TIPs recommendations and follow-up: children 9 to 11 months, Amhara.

Recommendation Offered	Accepted	Tried	Liked	Adopted
Give your baby the same vegetables you cook for your family (mashed); do not give the cooking water	2	1	0	0
Offer all the family foods, including shiro wot with injera with vegetable, and meat or fish. Chop and mash foods for baby	1	1	1	1
Give mashed fruits such as banana, mango, avocado, papaya, or other	1	1	1	0
Give porridge enriched with milk	1	1	1	1
Stop using a feeding bottle instead use a cup	1	1	1	0

Table A9: TIPs recommendations and follow-up: children 9 to 11 months, Tigray.

Recommendation Offered	Accepted	Tried	Liked	Adopted
Give your baby the same vegetables you cook for your family (mashed); do not give the cooking water	5	5	4	4
Offer all the family foods, including shiro wot with injera with vegetable, and meat or fish. Chop and mash foods for baby	3	2	2	1
Give mashed fruits such as banana, mango, avocado, papaya, or other	2	0	0	0
Give porridge enriched with milk	2	2	2	2
Add eggs, cooking oil, or groundnut/soy to your baby's porridge.	2	2	2	2
Stop using a feeding bottle instead use a cup	1	1	1	1
Take more time to breastfeed at each feeding; use both breasts at each feeding and feed until the breasts are soft	2	1	1	1
Offer child's favorite foods, increase the frequency and amount of liquids and food, during and after the illness while the child is recovering	1	1	1	1
Continue breastfeeding during day and night	3	1	1	1

Table A10: TIPs recommendations and follow-up: children 12 to 23 months, Addis Ababa.

Recommendation Offered	Accepted	Tried	Liked	Adopted
Feed your child the same foods that you give to the rest of the family; chop and mash the foods for the baby	1	0	0	0
Add different available vegetables to the child's food, such as carrots, spinach, or others	2	2	2	1
Add fat to the vegetables or offer a portion of avocado pear to your child each day	1	1	1	0
Provide the child's food to him/her in a separate bowl/plate.	2	2	1	1
Stay with your child during meals and help encourage your child to finish meals; be patient.	1	1	0	0
Offer child's favorite foods, increase the frequency and amount of liquids and food, during and after the illness while the child is recovering.	2	2	2	1

Table A11: TIPs recommendations and follow-up: children 12 to 23 months, Amhara.

Recommendation Offered	Accepted	Tried	Liked	Adopted
Add different available vegetables to the child's food, such as carrots, spinach, or others	2	2	2	0
Add fat to the vegetables or offer a portion of avocado pear to your child each day	2	2	1	1
Offer a piece of fruit daily	1	1	1	0
Give an egg each day	2	2	2	0
Increase the amount of food you feed to your child at each meal. Offer up to two full buna cups of food at each meal.	2	2	2	1

Table A12: TIPs recommendations and follow-up: children 12 to 23 months, Tigray.

Recommendation Offered	Accepted	Tried	Liked	Adopted
Feed your child the same foods that you give to the rest of the family; chop and mash the foods for the baby	2	1	1	0
Add different available vegetables to the child's food, such as carrots, spinach, or others	2	2	2	2

Add fat to the vegetables or offer a portion of avocado pear to your child each day	1	1	1	0
Give a snack such as fruit, porridge, or potato.	1	1	1	0
Offer a piece of fruit daily	1	1	1	0
Provide the child's food to him/her in a separate bowl/plate.	1	1	1	0
Increase the amount of food you feed to your child at each meal. Offer up to two full cups of food at each meal.	1	0	0	0